Pre-Exposure Prophylaxis (PrEP)

Pre-exposure prophylaxis, often known as PrEP, uses drugs originally developed to treat HIV-positive patients as a way to prevent HIV infection in HIV-negative people. People without HIV take PrEP drugs regularly—for example, daily—similarly to the way that women take birth control pills to prevent pregnancy.

The idea of using HIV antiviral drugs to prevent infection has been around since the beginning of the epidemic, but until recently, it had been difficult to complete PrEP trials because of medication toxicity, viral resistance, and inadequate treatment efficacy. In November 2010, however, the results of the iPrEx (Preexposure Chemoprophylaxis) study renewed hope for this intervention. The study of 2,500 men and transgender women who have sex with men found that participants who took a daily dose of tenofovir/emtricitabine (Truvada) reduced their risk of HIV infection by 44 percent compared to people who took a placebo. More significantly, people who took the combination drug more than 90 percent of the time reduced their HIV risk by 73 percent. Conducted by Robert Grant of the University of California San Francisco, iPrEx is the first successful PrEP study and a huge leap forward for the biomedical prevention field.

As with any new treatment, many concerns must be addressed before PrEP is widely available. One concern is that patients could develop resistance to the PrEP drug used, although this did not happen in the iPrEx study. While Truvada is an already approved treatment for HIV infection, the cost of producing and administering the treatment remains daunting. In the United States, Truvada, produced by Gilead Sciences, costs $12,000 to $14,000 per year. HIV medicines are often covered by Medicaid and other healthcare programs, but no U.S. health plans have provisions for paying for prescriptions for HIV-negative people. In much poorer countries, generic versions can cost as little as 40 cents per pill (or $1.44 per year), but price remains a barrier to access.

Other issues that will have to be examined in further trials include: determining whether the iPrEx drug regimen will work for women, heterosexual men, and injection drug users. Recently, Family Health International (FHI) halted a Truvada PrEP trial among African women because of concerns about effectiveness. During an interim check of the data, the FHI team found that there were equal numbers of new infections in both the Truvada and placebo groups, and an increase in the number of pregnancies in the Truvada group. The researchers are eager to analyze the data further to see which factors caused the trial to fail.

Likewise, future trials will seek to identify the long-term effects of medication use (the iPrEx study covered a span of only 18 to about 36 months) and patient adherence to dosing requirements. Although the side effects reported in the iPrEx study were relatively minor—minor nausea was the one most commonly reported among iPrEx participants—these effects might have kept some patients from using the drug daily as prescribed. That said, a daily, single pill is probably the simplest of all drug regimens to main-
What’s Next?

The Centers for Disease Control and Prevention (CDC) is in the process of developing formal guidelines for the use of PrEP and the iPrEx drug. In the meantime, the CDC has released “interim guidelines” and several fact sheets, which delineate both cautions about and potential uses of the drug. Recognizing that Truvada is already an FDA-approved and commercially available drug, these guidelines remind both potential patients and physicians that the iPrEx trial had many limitations. They also state that for now PrEP may be safely used if targeted at populations of men who have sex with men engaged in higher risk behaviors, delivered as part of comprehensive HIV prevention services, and accompanied by regular monitoring of side effects, adherence, and risk behavior. These guidelines highlight the need for further research. There are more than 20,000 people enrolled in other PrEP studies around the world, including several sponsored by the CDC, with results expected over the next two years. These trials, along with iPrEx and the recent first successful microbicide trial represent new, if still cautious, hopes for the HIV biomedical prevention field.

References